

Jordan Valley  
Authority

Business Process  
Mapping: General  
Business Cycle

Financial Accounting  
System Program

July 2000

OSC Member  
FAS Team Member



**FORWARD**

Collaborative Approaches for Resolving Water Issues



## Business Process Mapping:

### √ **General Process Mapping**

- Expenditure Business Cycle
- Inventory and Fixed Assets Business Cycle
- Revenue Business Cycle
- Budget and Accounting Business Cycle
- Workshop Business Cycle
- Payroll & Personnel Cycle



Development Alternative Inc  
7250 Woodmont Ave. Suite 200  
Bethesda, Maryland 20814



Prepared for the United States Agency for International Development  
under Contract #HNE-C-00-96-90027-00

## ACRONYMS

AP	Accounts Payable
AR	Accounts Receivable
ASG	Assistant Secretary General
CFI	Call for Information
COA	Chart of Accounts
DFWA	Daily Water Balance and Forecast
DIO	Daily Irrigation Order
FA	Fixed Assets
FRL	Farmers' Receivable Ledger
GL	General Ledger
HQ	Head Quarter
H/W	Hardware
IC	Inventory Control
JC	Job Costing
JPRCO	Jordan Petrol Refinery Company
JVC	Jordan Valley Commission
KAC	King Abdullah Canal
KFW	Kreditanstalt Fur Weider aufbau
KTR	King Talal Reservoir
MOF	Ministry of Finance
MOP	Ministry of Planning
MWC	Monthly Water Consumption
NEPCO	National Electrical Power Company
OE	Order Entry

PO	Purchase Order
RDBMS	Relation Database Management System
SGWA	Southern Ghors and Wadi Araba
S/W	Software
WIP	Work In Progress
WMIS	Water Management Information System

A horizontal number line with boxes for each digit from 0 to 20. The boxes are arranged in two groups: the first group contains boxes for 0 through 9, and the second group contains boxes for 10 through 20. Each box is empty and ready for a digit to be written.

[illegible]

[illegible][illegible][illegible]

00 00 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000  
 000000 0000 000000 0000 00000000 00000000 00000000  
 00000000 0000 0000. 00 000000 00 0000 0000 000000 00000000  
 00000 0000000000 0000000 00 000000 000000 0000000000 000000  
 0000000 0000000 0000000000. 00000 000000000000 00000 00000000  
 0000000000 0000 00000 000000000 00 00000 000000000 000000 00000  
 000000000 00000. 0000000 00000 00000000000 000000000 00000  
 0000000000 0000 00000000 000000000000.

000000 0000 00000000 00000000 0000 00 0000 0000 0000 00000000  
 000000 000000 00000000 00000000 00000000. 0000 0000 0000 00000000  
 00000000 0000000000 00000000 000000 000 0000000000 00000000  
 000000 000000 00000000 00000000 00 0000000 00000000 00000000  
 00000000 000000 00000000 000 0000000000 00000000 00000000 00  
 0000000 000000 0000000 00000000000 00 0000 000 0000 00000000  
 000000000 (LAN) 000 0000 0000 00 000 000000 0000 0000 000  
 00000000 000000 floppy disks. 000000 00000000 0000000 0000 0000  
 000000 0000 0000000000 00000000 0000 0000 0000 0000 UNIX  
 0000000 00000 RAS 0000000 0000000 000 0000 0000000 NT 00000  
 SCADA 0000 0000 000 000000 000000 000 00000 Intel. 0000 0000 0000  
 000 0000000 Oracle 7 00 0000 00 000000 00000000 0000 000 00000000  
 000000 000000 MS-Windows NT 000 0000000 Oracle 7-workgroup edition  
 0000000 0000000000 000000000 0000000 95 0000000 000 Developer/2000.  
 000000 0000 0000 00000000 00000000 000000 00 000 000000 00000000  
 00 0000000 000000000 0000000000 00000000. 000 000000 00000000 00







## EXECUTIVE SUMMARY

In 1972, the Government of Jordan established the Jordan Valley Commission (JVC) with a full mandate for economic and social development in the Jordan Valley. Jordan Valley Development Law 18 of May 1977 made the JVC into the Jordan Valley Authority (JVA) in charge of planning and implementing integrated social and economic development schemes in the Jordan River Valley. Law 19 made the JVA part of the Ministry of Water and Irrigation on 12 March 1988.

In August 1998, a team of financial management experts from FORWARD and JVA developed a two-year work plan for designing and implementing a new financial accounting system (FAS) for the JVA. The main objective of the FAS is to provide a tool for tracking, recording and accessing complete financial information to help the JVA to operate as an autonomous, self-sustaining entity. The accounting system currently in place tracks what is spent and what is outstanding on a line item level. It is an automated system that is used in conjunction with a manual system to generate required reports for the Ministry of Finance. It is not a true accounting system and does not have the structure which would facilitate tracking costs by function and responsibility. In addition, transactions are not recorded on an accrual basis.

After current business practices are understood and documented, the FORWARD team with help of JVA staff can design and identify any changes in procedures that will be necessary to implement the FAS. To that end, this document is intended for the use of the team as a resource and for documentation.

The JVA is headed by a Secretary General (SG) and is organized into seven administrative units called governates that are headquartered in Amman. The governates are Administration; Finance, Supplies and Tenders; Studies and Projects; Northern and Middle Ghors; Lands and Rural Development; Southern Ghors and Wadi Araba; and Planning and Environment. Each one is headed by an Assistant Secretary General (ASG) and is subdivided into directorates, divisions, and sections.

The area of operations of the JVA extends from the Yarmouk River in the north to the Gulf of Aqaba in the south, a distance of three hundred sixty-one kilometers with an average width of ten kilometers. Core operations at the JVA include water resource management, land development, and tourism and recreation development. According to the cost/tariff model, the water supply system in the Jordan Valley is divided into four major components: primary supply, the King Abdullah Canal (KAC), pumping stations, and the secondary delivery system. Water distribution in the Valley is allocated over four geographical directorates: Northern, Central, Southern and Southern Ghors. The first three directorates receive water from the KAC and other sources while the Southern Ghors and Wadi Araba (SGWA) Directorate depends on side valleys and ground water.

The directorates are responsible for delivering water to several stage offices. The total number of stage offices in the Valley is twelve, two of which are in SGWA. Each stage office is divided into development areas which contain farming units. The average size of a farming unit is around forty *dunums* (1000 square meters). Every unit is considered a subscriber (customer) and is billed monthly for water consumption.

The Water Management and Control Directorate of the Northern and Middle Ghors Governate controls the development areas of the Northern, Middle and Southern directorates. The Control Systems Division receives daily information from the three

directorates regarding water demand and supply and accordingly prepares a Daily Water Balance and Forecast (DWBF) for nine stage offices (1-8,10) depending on water available in the KAC and other sources. According to the DWBF, the JVA field distributors generate Daily Irrigation Orders (DIO) and distribute water to the farming units. Each distributor prepares a daily field report that shows the water supplied to each farming unit and submits it to the stage office.

Each stage office has a cashier, an accounting clerk and a data entry clerk who manually maintain financial records on the sale of irrigation water to farmers. At the end of each month, the accounting clerks calculate the monthly water consumption and the invoice amount according to the water tariff. The farmers pay the amount due to the cashier at the stage office against a formal receipt. The data entry clerk updates the billing system according to cash receipts.

In addition to manual records, every stage office has a data server and data entry workstation(s). All information related to billing, water, and irrigation is kept on the data server. The ten stage offices of the Northern and Middle Ghors Governate transfer data to the server at the Water Management and Control Directorate at Dirar via a limited area network (LAN) either daily or on demand using floppy disks. The directorate operates a Digital Alpha server 4000 series running Digital UNIX and a Windows NT (RAS) server and SCADA system running on an Intel based machine. The Alpha server is running Oracle 7 whereas stage offices are operating an MS-Windows NT Server with ORACLE 7, Workgroup Edition, and two Windows 95 clients are running Developer/2000. The JVA is currently trying to interconnect the stage offices in Northern and Middle Ghors Governate to facilitate data transfer. The two stage offices of SGWA Governate maintain the same system but are not connected anywhere. Note that an interface has to be developed in order to link the current database with the new FAS.

According to Law 19, the JVA has the authority to expropriate land and/or water rights in the Jordan Valley. Accordingly, the JVA through its Land and Rural Development Directorate buys land, divides large blocks into units and sells them to farmers or residents of the valley for development. A special committee called "Land Evaluation" estimates the "land previous capital value," i.e., the price the JVA pays to former owners. The selling price of the land, the "land capital value," equals the "land previous capital value" plus development costs. Usually, the original owner has priority to buy part or all of the land expropriated according to a formula.

In recent years, the JVA has started developing areas for tourism and recreation through the Investment Directorate of the Land and Rural Development Governate. The focus has been on a plan to develop the eastern coast of the Dead Sea that will be implemented by phases until the year 2010. The JVA leases and controls other kinds of investments in the valley such as gas stations, small recreation areas, industrial projects and stone pits.

As well as the aforementioned core activities, operations also include supporting activities, namely vehicle and machinery maintenance and laboratories. The JVA has two workshops, the central workshop in the Middle and Northern Ghors Governate and the workshop of the Southern Ghors and Wadi Araba Governate. The central workshop provides maintenance and repair services for all JVA vehicles and machinery. The main objective of the laboratories is to monitor water and soil quality in the valley.

The JVA has fourteen stores scattered among its different directorates in Amman and the Jordan Valley. There is no official figure for the total monetary value of items at JVA stores, but head of the Supplies Directorate believes the value is roughly JD 1.5 million.

As a control procedure at the end of each year, several committees formed by the Secretary General count all items in stock. Inventory lists are prepared and submitted to the Supplies Directorate, and a copy is filed at each store.

The Finance Directorate is responsible for all financial matters at the JVA including yearly budget preparation, cash collection, check payments, and reporting to the Ministry of Finance (MOF). All other directorates prepare yearly budgets and submit them to the Financial Manager who verifies them and submits them to the General Government Department after approval by the SG. After the budget is approved by parliament, the Finance Directorate starts issuing checks accordingly. Except for checks issued by the Land and Rural Development Directorate for payment for expropriated land, check issuance is centralized at the Finance Directorate at headquarters. The Directorate includes four divisions: Project Accounting, Expenditures, Internal Audit, and Finance. All checks are paid by the Expenditures Division.

The following systems currently in place could be integrated into the new FAS: the computerized personnel/payroll system which tracks employee data such as salary, work location, and withholding; the Water Management Information System ( WMIS), a billing system for irrigation water; and the Lands Department Information System which tracks and handles land transactions such as expropriation, redistribution, purchasing, leasing and changing ownership. The budget and accounting system currently in place may still need to be maintained for purposes of reporting to the Ministry of Finance though it may not be appropriate to integrate it into the new FAS. Budget information for the proposed FAS should be allocated into different classifications which provide information on a cost center/responsibility center basis in order to provide meaningful management information.

A new tender funded by kreditanstalt fur weider aufbau (KFW) has been released to expand the WMIS. Through this tender the control center, the directorates, and the stage offices will be linked together through the JVA thirty-pair, private communication cable. The cable extends over one hundred kilometers in length alongside the king ABDULLAH canal. The implementation phase of the FAS will require a mature and reliable wide area network (wan) in order to establish an automated financial/accounting system in all JVA offices. Such a computer network will facilitate data flow, data analysis, systems analysis, and data entry from various JVA sites in AMMAN and in the valley. Without a wan, financial data will continue to reside at the directorate or stage office levels and will not be available for use either by senior management or by the FAS.

## TABLE OF CONTENTS

<a href="#"><u>Acronyms</u></a>	I
<a href="#"><u>Arabic Executive Summary</u></a>	III
<a href="#"><u>Executive Summary</u></a>	VII
1. <a href="#"><u>Overview</u></a>	1
2. <a href="#"><u>Ownership and Management Structure</u></a>	3
3. <a href="#"><u>Operations</u></a>	7
<a href="#"><u>3.1 Core Activities</u></a>	7
<a href="#"><u>3.1.1 Water Resource Management</u></a>	7
<a href="#"><u>3.1.2 Land Development</u></a>	12
<a href="#"><u>3.1.3 Tourism and Recreation Development</u></a>	12
<a href="#"><u>3.2 Supporting Activities</u></a>	13
<a href="#"><u>3.2.1 Vehicle and Machinery Maintenance</u></a>	13
<a href="#"><u>3.2.2 Laboratories</u></a>	15
4. <a href="#"><u>Stores and Inventory</u></a>	17
5. <a href="#"><u>Water Billing and Revenue</u></a>	19
6. <a href="#"><u>Finance and Expenditures</u></a>	21
7. <a href="#"><u>Computer Use</u></a>	25
<a href="#"><u>7.1 Payroll System</u></a>	25
<a href="#"><u>7.2 Water Management Information System (WMIS)</u></a>	25
<a href="#"><u>7.3 Budget and Accounting System</u></a>	25
<a href="#"><u>7.4 Lands Department Information System</u></a>	26
<a href="#"><u>7.5 Connecting Directorates and Stage Offices in the Jordan Valley with Headquarters via Limited Area Networks and Wide Area Networks (LAN/WAN)</u></a>	26

## FIGURES

2.1 Organizational Structure of the Jordan Valley Authority	4
3.1 Northern Directorate Water Sources and Distribution	8
3.2 Middle Directorate Water Sources and Distribution	9
3.3 Southern Directorate Water Sources and Distribution	10
3.4 Vehicle Repair	14
6.1 Check Payment Process	22

## **TABLES**

3.1 Stage Offices and Farming Units .....	11
3.2 Primary Supply Water Sources .....	11
4.1 Store Names and Locations.....	17



## **CHAPTER 1**

### **OVERVIEW**

In August 1998, a team of financial management experts from FORWARD and JVA developed a two-year workplan for designing and implementing a financial accounting system (FAS) for the Jordan Valley Authority (JVA). The main objective of the FAS is to provide a tool for tracking, recording and accessing complete financial information to help the JVA to operate as an autonomous, self-sustaining entity.

After the workplan was developed, FORWARD formed another team of experts to design and implement the FAS. Their first step is mapping current business processes and procedures. This activity includes diagramming and validating existing systems and then documenting financial processes and procedures showing the relationship between core activities and services. After current practices are understood and documented, the team can design and identify any changes necessary in order to implement the FAS. To that end, this report is intended for the use of the FORWARD team as a resource and for documentation.





## **CHAPTER 2**

### **OWNERSHIP AND MANAGEMENT STRUCTURE**

In 1972, the Government of Jordan established the Jordan Valley Commission (JVC) with a full mandate for the economic and social development of the Jordan Valley. In Jordan Valley Development Law 18 of May 1977, the JVC became the Jordan Valley Authority and took charge of planning and implementing integrated social and economic development schemes in the Jordan River Valley. This law extended the JVA mandate to cover the basins of the Yarmouk and Zarqa rivers below 300 meters above sea level and any other areas the cabinet of ministers decided to include. At that time the government also decreed that the remaining part of the Rift Valley from the northern shore of the Dead Sea south to Aqaba be made part of the Jordan Valley and thus within the responsibility of the JVA.

The JVA became part of the Ministry of Water and Irrigation (MWI) on 12 March 1988, by Jordan Valley Development Law 19 which superseded Law 18. <sup>1</sup> According to Law 19, the JVA mandate is to:

1. Develop water resources for irrigated farming and other uses.
2. Improve the environment and living conditions of the Jordan Valley.
3. Design and build roads.
4. Develop tourism and recreation.
5. Enhance social conditions of Jordan Valley inhabitants.

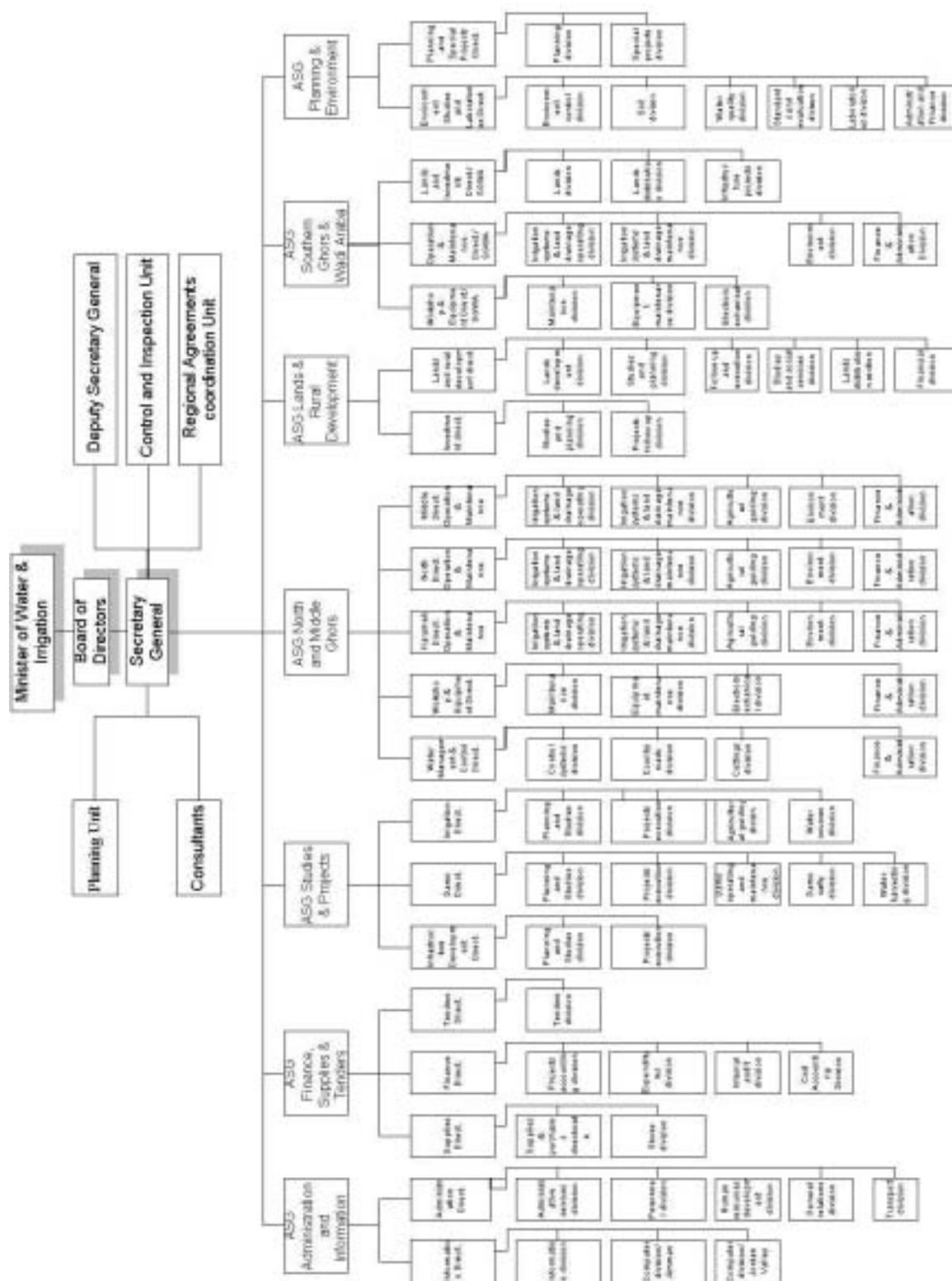
In recent years, the development of water resources for irrigation services has taken clear preeminence over other functions.

The instructions approved by the MWI on 29 July 1999, organized the JVA into seven administrative units called governates under the supervision of a Secretary General (SG). Each unit is headed by an Assistant Secretary General (ASG). Diagram 2.1 below illustrates the overall organizational structure of the JVA.

---

<sup>1</sup> Source: *Direct and Indirect Benefits of Irrigated Agriculture in the Jordan Rift Valley Study*

**Diagram 2.1**  
**Organizational Structure of the Jordan Valley Authority**



The structure and responsibilities of each governate are briefly described below.

The Administration Governate provides administrative services to the JVA. It includes two directorates: (1) Administrative which is responsible for human resources, transportation, general relations and other administrative issues; and (2) Information which is responsible for information technology, hardware, and software at headquarters (HQ) in Amman and in the Jordan Valley.

The Finance, Supplies and Tenders Governate is a service provider and is divided into three directorates: (1) Finance, which controls expenditures, vendor payments, project accounting, and bank reconciliation's and which prepares the annual budget; (2) Supplies, which handles purchases and controls stores; and (3) Tenders, which handles tenders and bids. All financial matters are centralized in this directorate. All payments are prepared and issued by the treasurer in the Expenditures Division except for some checks for expropriated land which are prepared and issued by the Land and Rural Development Directorate.

The Studies and Projects Governate plans, executes and/or supervises various projects in the Jordan Valley. It includes three directorates: (1) Irrigation, which plans, designs and constructs irrigation projects; (2) Dams, which plans, constructs, operates, and maintains large dams and reservoirs; and (3) Infrastructure Development, which constructs and supervises infrastructure projects.

The Northern and Middle Ghors Governate develops, maintains and controls water sources within its operating area which extends from the Al Adasiah Conversion Dam on the Yarmouk River (on the Syrian border) to the northern shore of the Dead Sea, a distance of one hundred four kilometers. The main source of water in this area is the King Abdullah Canal (KAC). Other water sources are side valleys and streams and the dams built on them. Most of this water runs into the KAC. This governate is organized into five directorates, three of which are geographical directorates that deliver water to the northern, middle and southern regions. The other two directorates are Workshop and Equipment and System Control and Water Management. The former provides maintenance and repair services to the whole of the JVA, whereas the latter supports, controls, and manages the water sources within the operating area of the three geographical directorates.

The Lands and Rural Development Governate makes plans to organize the Valley into different areas. It includes two directorates: (1) Land and Rural Development, which is responsible for planning and carrying out land development for farming and housing as well as land distribution to farmers and residents; and (2) Investment, which is responsible for organizing and developing all kinds of investments in the valley.

The Southern Ghors and Wadi Araba Governate is responsible for activities in the area from the Dead Sea south to Aqaba. The main water sources in this area are side valleys, streams, and wells. This governate is divided into three directorates: (1) Operation and Maintenance, which is responsible for the core activity of water distribution to farming units; (2) Workshop and Equipment, which is responsible for providing services to the governate; and (3) Land and Investment responsible for land development and distribution of farming units as well as for investment projects in the region.

The Planning and Environment Governate includes two directorates: (1) Planning and Special Projects responsible for comprehensive strategic planning and follow-up on the design and implementation of special projects such as information technology transfer; and (2) Environment Studies and Laboratories which monitors soil and water quality and other environmental issues in the Valley.

## **CHAPTER 3**

### **OPERATIONS**

#### **3.1 Core Activities**

The area of operations of the JVA extends from the Yarmouk River in the north to the Gulf of Aqaba in the south, a distance of three hundred sixty-one kilometers with an average width of ten kilometers. The Yarmouk River to the Dead Sea is almost one hundred four kilometers, the Dead Sea is eighty-one kilometers long and Wadi Araba is one hundred seventy-six kilometers long.<sup>2</sup> Core operations at the JVA include water resources management, land development, and tourism and recreation development.

##### **3.1.1 Water Resource Management**

The KAC is the main source of water in the Jordan Valley for the Middle and Northern Directorate. It carries water from Yarmouk River into the Jordan Valley to the northern shore of the Dead Sea. Other water sources feed the KAC such as Al Mokhaiba Wells, the Wadi Al Arab Dam, and the North Conveyor and King Talal Reservoir (KTR). Part of KAC water is pumped to Amman through Deir Alla for urban use; the remaining water in the KAC is distributed to farming units for irrigation in the Jordan Valley.

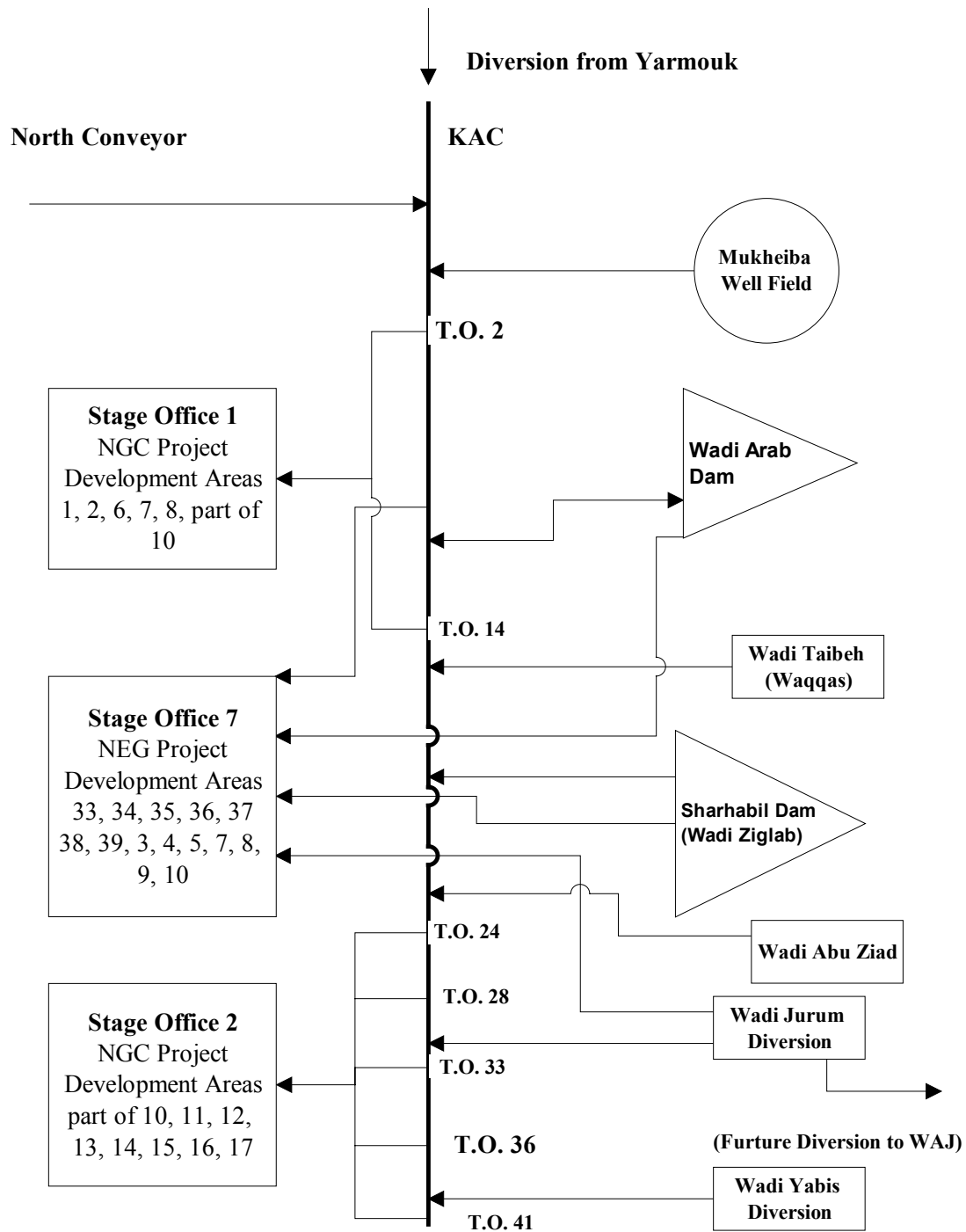
Water distribution in the valley is allocated over four geographical directorates: Northern, Central, Southern and Southern Ghors. The first three directorates receive water from the KAC and other sources while the Southern Ghors and Wadi Araba (SGWA) Directorate depends on side valleys and ground water. Each directorate is responsible for delivering water to several stage offices. The total number of stage offices in the valley is twelve, two of which are in the SGWA. Each stage office is divided into development areas which contain farming units. The average size of each farming unit is around forty *dunums* (one thousand square meters). Each unit is considered as a subscriber (customer) and is billed monthly for water consumption.

Diagrams 3.1, 3.2 and 3.3 on the following pages illustrate sources of water, stage offices and the distribution of water in the Northern, Middle and Southern directorates.

---

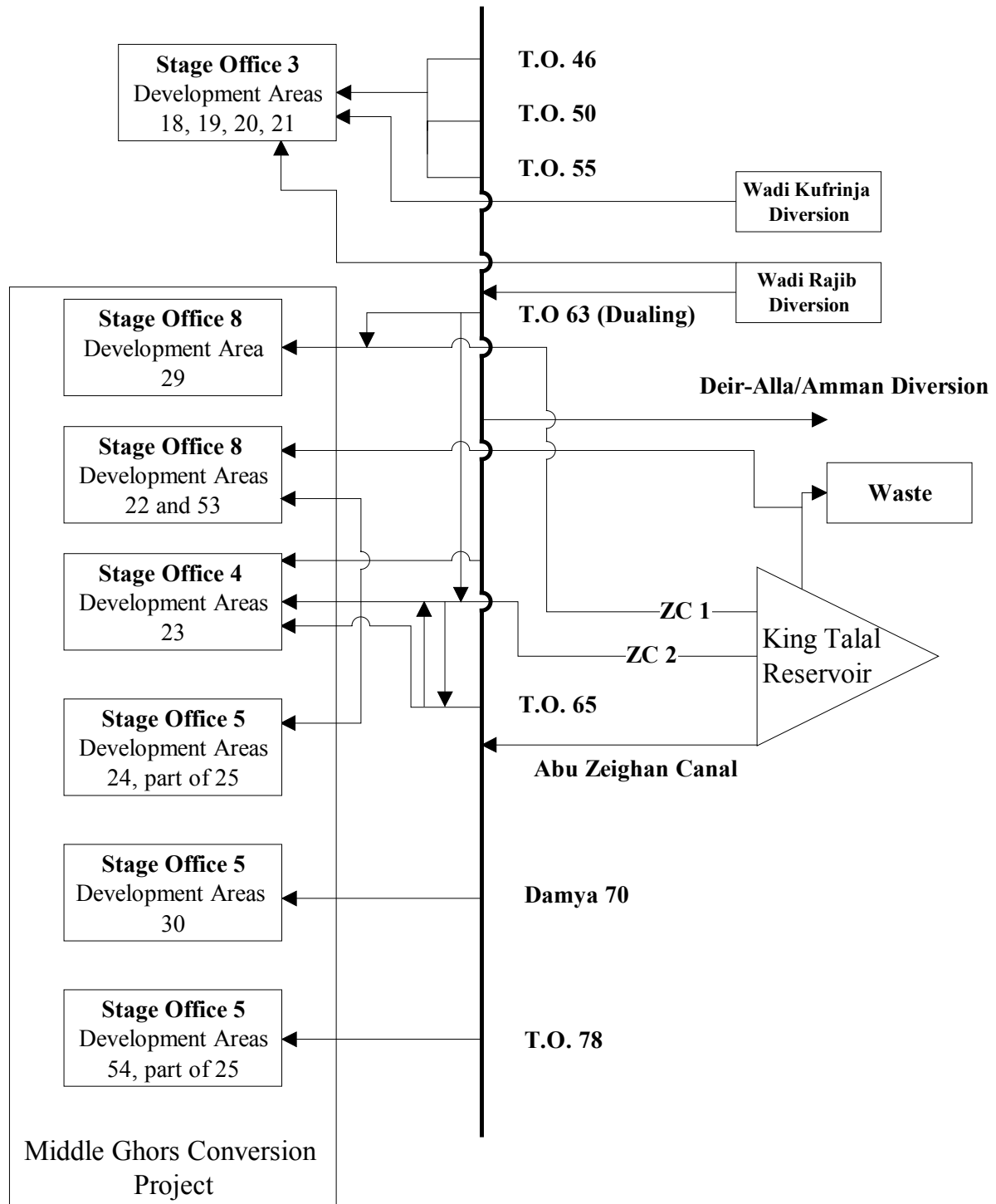
<sup>2</sup> Source: *Direct and Indirect Benefits of Irrigated Agriculture in the Jordan Rift Valley Study*

**Diagram 3.1**  
**Northern Directorate Water Sources and Distribution**

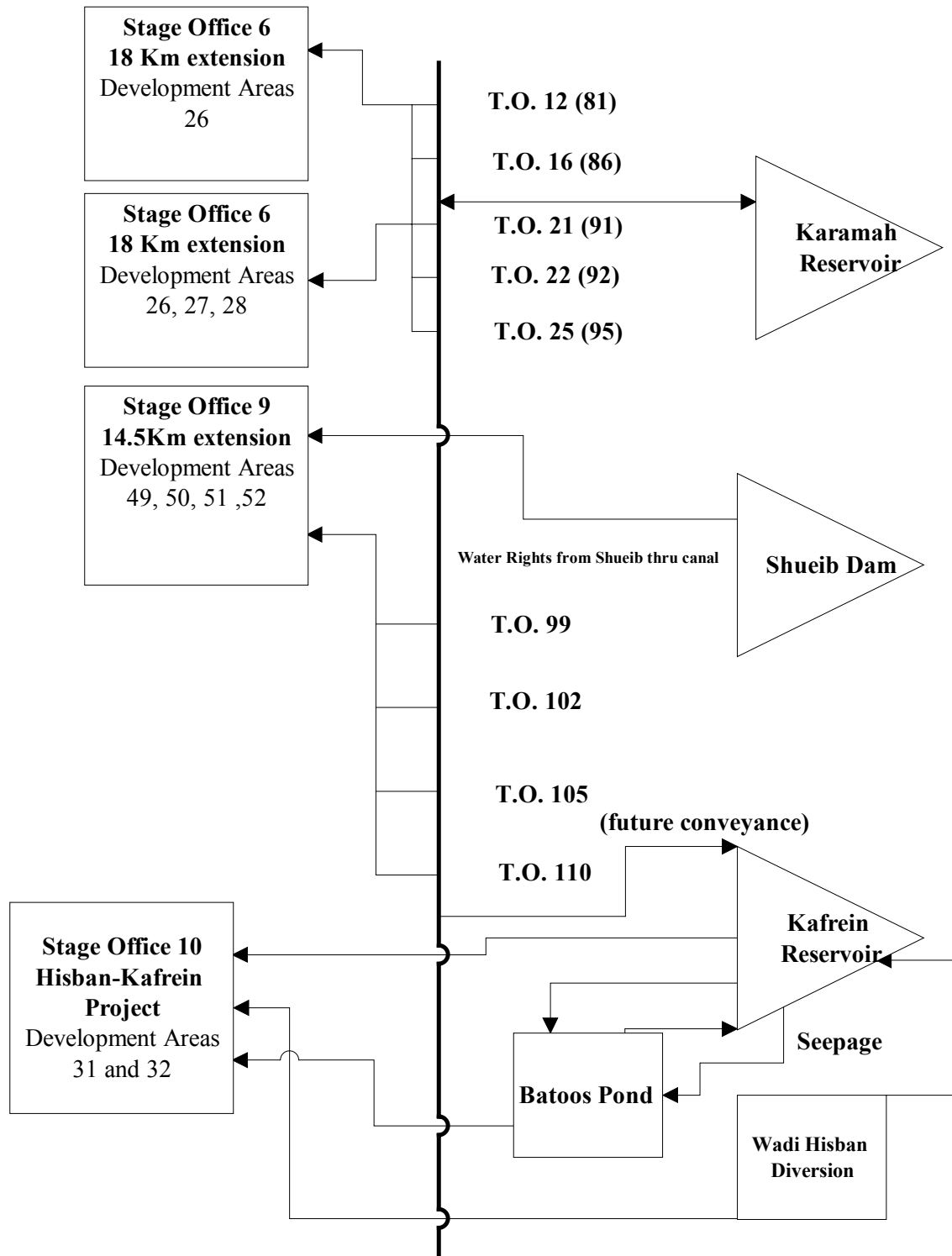


**Diagram 3.2**

## Middle Directorate Water Sources and Distribution



**Diagram 3.3**  
**Southern Directorate Water Sources and Distribution**



As mentioned previously, the SGWA Directorate provides irrigation water from side valleys and from ground water. It contains two stage offices. The first includes Ghor al Safi, Fifa and Khnezeira, and the second includes Ghor Al-Mazra'a, Al-Hadeitkeh and Al-Thra'a.



Table 3.1 below shows the number of stage offices and farming units (customers) at each directorate.

**Table 3.1**  
**Stage Offices and Farming Units**

Directorate	Number of Stage Offices	Number of Farming Units
Northern	3	2500
Middle	4	2213
Southern (Karamah)	3	1551
Southern Ghors and Wadi Araba	2	1532
<b>Total</b>	<b>12</b>	<b>7796</b>

Only two stage offices are currently operating at the South Directorate (Al-Karamah). The third stage office (number 9) which is called the "Fourteen-and-a-Half Kilometer Project" is not operating because of a water shortage.

According to the cost/tariff model, the water supply system in the Jordan Valley is divided into four major components: primary supply, the KAC primary conveyance system, pumping stations, and the secondary delivery system.

- Primary supply represents the sources of water that feed directly into the KAC or the secondary system. Table 3.2 shows the water sources that form the primary system.

**Table 3.2**  
**Primary Supply Water Sources**

<u>Northern Directorate</u>	<u>Middle Directorate</u>	<u>Southern Directorate</u>
Yarmouk River/Adassiyya Unity Dam System	• Wadi Kufranja	• Karamah Reservoir
• North Conveyor	• Wadi Rajib	• Shuieb Reservoir
• Mukheiba Wells	• King Talal Reservoir	• Kafrein/Hisban System
• Wadi Arab Reservoir		
• Wadi Taibeh (Waqgas)		
• Wadi Sharhabeel (Ziglab)		
• Wadi Abu Ziad		
• Wadi Jurum		
• Wadi Yabis		

**Southern Ghors and Wadi Araba Directorate:**

Wadi Hasa, Fifa, Khnezeira, and Ain Maghara System  
Mujib  
Wadi Araba

- The KAC carries water through the valley. There are twenty-five turnout points on the canal that distribute water to nine stage offices by gravity or by pumping depending on the level of the irrigated area. Another turnout point is the Deir-Alla/Amman diversion which supplies water to Amman for urban use. In addition, there are five pumping stations in the Southern Ghors and Wadi Araba Directorate that pump water directly from water sources to stage offices.
- Pumping stations all operate by electricity. Electricity bills are received monthly directly by the Finance Directorate; no copies are provided to the operation directorates.
- The secondary delivery system sends water from the KAC or from other sources directly to farming units by means of a network of pipelines. The secondary system is allocated over twelve stage offices which are operated by the four geographical directorates. Table 1 above lists the number of stage offices and farming units in each directorate.

### **3.1.2 Land Development**

According to Law 19, the JVA has the authority to expropriate land and/or water rights in the Jordan Valley. Accordingly, the JVA through its Land and Rural Development Directorate buys land, divides large blocks into units and sells them to farmers or residents of the valley for development. (In recent years, all land development projects have been for farming.) The Finance Division at headquarters maintains records on the receivables (purchasers) and the payables (original owners of the expropriated land) to follow up on the amounts due to/from each. (Records are maintained both manually and by computer.) The division also prepares and distributes checks to pay for land. Division staff consists of a cashier and two accountants.

A special committee called "Land Evaluation" estimates the value of the expropriated land. The estimated value, which is called the "land previous capital value," is recorded as a debt to the original owner on the date of possession and is paid to him in annual installments over a period not to exceed ten years. Simple annual interest at a rate of 4% is calculated and paid with the installments. The selling price of the land, which is called the "land capital value," equals the "land previous capital value" plus development costs. Purchasers pay the total cost in cash either at the time of purchase or in annual cash installments not to exceed twenty payments. An annual simple interest rate of 4% on the outstanding balance is charged. Payments are collected by the cashier at HQ. Usually, the original owner has priority to buy part or all of the land expropriated according to a formula.

### **3.1.3 Tourism and Recreation Development**

In recent years, the JVA has started developing areas for tourism and recreation through the Investment Directorate of the Land and Rural Development Governate. The focus has been on a plan to develop the eastern coast of the Dead Sea that will be implemented by phases until the year 2010.

In such projects the area is divided into blocks, each destined for a specific kind of investment. The directorate receives investment applications from interested parties and studies their feasibility and their benefits to the area and the valley. After approval by the head of the directorate, the SG, and the Office of the Prime Minister, a lease contract is signed by the Minister of Water and Irrigation. Usually the contract includes a one-year grace period and a down payment in advance on the next three years' rent. An inflation factor of 2% is added to the lease amount. Payment is received by the cashier at the

Finance Directorate at headquarters and is deposited in the JVA bank account. The Investment Directorate files and monitors the contract.

The Investment Directorate also designs projects, prepares tender documents through a consultant, and tenders projects through the Tenders Directorate as per government regulations. After selecting the contractor, the Infrastructure Directorate monitors the project in coordination with the Investment Directorate. The contractors' invoices are sent to the Finance Directorate for payment after approval from the Infrastructure Directorate and from the Secretary General.

The JVA leases and controls other kinds of investments in the valley such as gas stations, small recreation areas, industrial projects, and stone pits. The Follow-up and Execution Division at the Lands and Rural Development Directorate maintains contracts and monitors these investments. The head of the division reviews and studies investment applications and their adherence to JVA regulations. If the investment includes the use of natural resources such as sand or stone, an acknowledgment letter is sent to the Natural Resources Authority. All investment applications must be approved by the JVA Board of Directors and then by the Office of the Prime Minister. After approval, the investor is asked to submit a bank guarantee for a specified amount and to pay the first year of the lease in advance. The JVA monitors adherence to contract terms through field visits. Payments are made at the cashier section in the Finance Directorate at headquarters. Currently there are nine lease contracts.

## **3.2 Supporting Activities**

As well as the aforementioned core activities, operations also include supporting activities, namely vehicle and machinery maintenance and laboratories.

### **3.2.1 Vehicle and Machinery Maintenance**

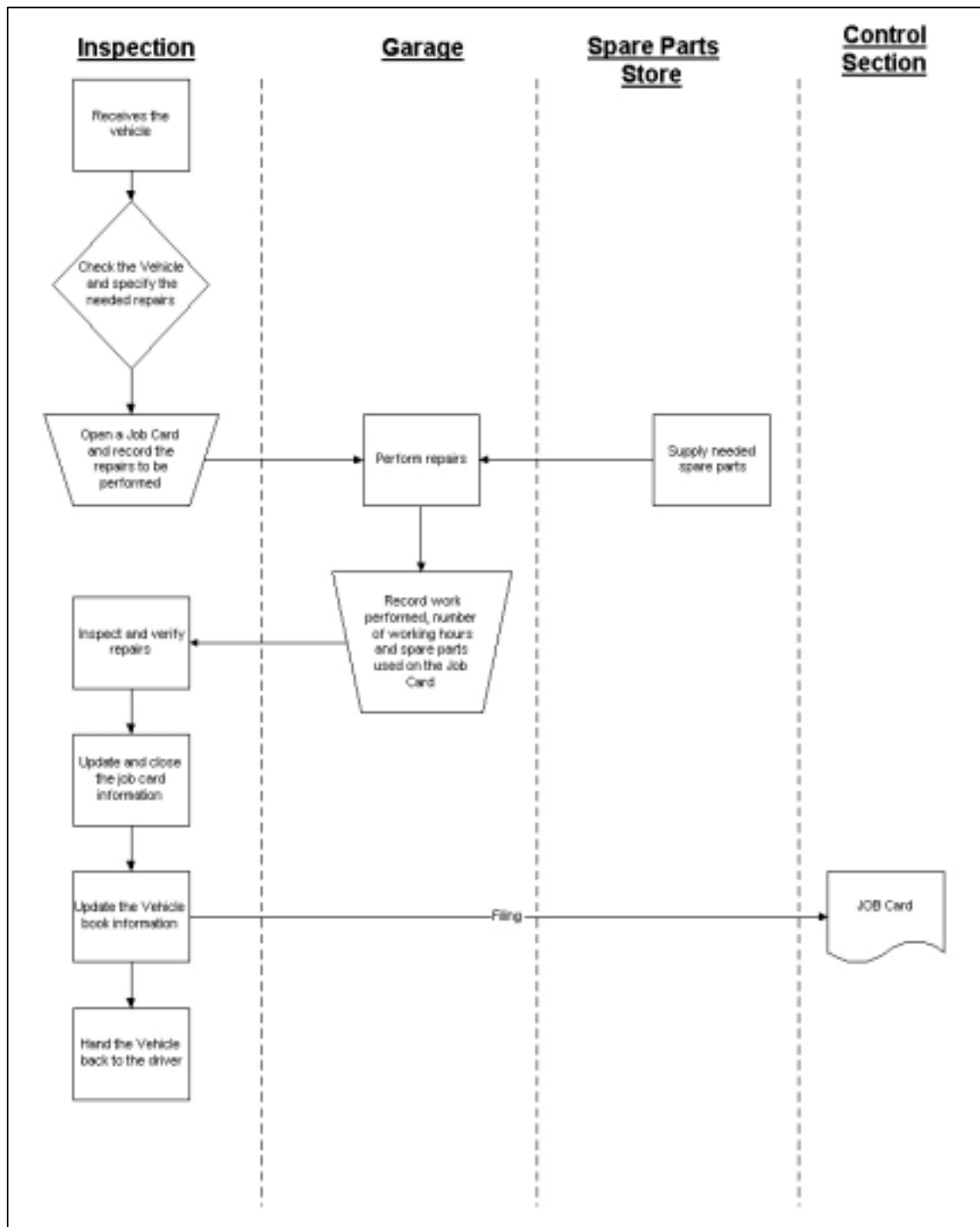
The JVA has two workshops, the central workshop in the Middle and Northern Ghors Governate in Al-Fanoush near Deir Alla, and the workshop of the Southern Ghors and Wadi Araba Governate in Ghor Al-Safi. The same procedures are applied at both.

The central workshop was built by GTZ in the early eighties. It provides maintenance and repair services for all JVA vehicles and machinery. It has divisions for vehicles, equipment and electromechanical maintenance and includes two stores, one for spare parts and the other for general items such as stationery, construction materials, and furniture.

The central workshop receives all newly purchased vehicles, inspects them, opens a file on each, and then assigns the vehicles to drivers. At the end of each month, the transport section in each directorate sends data on trips and expenses to the central workshop where information on all vehicles and machinery is kept on file.

Diagram 3.4 illustrates the procedures for repairing a vehicle.

**Diagram 3.4  
Vehicle Repair**



A job card is assigned to each new job. It is attached to the vehicle or the machine throughout all stages of repair. At each stage, the job card is updated according to the work performed, the working hours involved, and the spare parts used. Copies of store vouchers or any outsourced work invoiced are attached to the job card. After completing the job, the cost is calculated and recorded in the book kept in each vehicle for that purpose. The card is posted to daily schedules and then filed at the control section in the vehicle file. A monthly summary report on workshop performance is prepared and submitted to headquarters. The central workshop also performs repair and maintenance jobs for Government agencies other than the JVA. A job card is opened for each of

these tasks but is not invoiced. The same procedures apply for machines, pumps and other equipment repairs with the difference that sometimes a maintenance team performs the job at a site outside the workshop.

### **3.2.2 Laboratories**

One of the main objectives of the Environment Studies and Laboratories Directorate is to monitor water and soil quality in the valley. The Directorate operates a laboratory that tests soil and water samples daily from several locations including the KAC. The results are submitted every day to the Water Management and Control Directorate. (The results of tests performed at SGWA are submitted to that Governate.) The Directorate prepares a monthly report of results, but the report does not include costs.

In addition, the laboratory performs tests for external parties such as farmers and companies. Users are charged for the tests according to a schedule, and fees are collected in cash upon performance. The cashier at the directorate office in the valley collects the cash against official receipts and deposits it in the bank. He sends deposit slips with a collection report to the Finance Directorate at headquarters periodically.



## CHAPTER 4

### STORES AND INVENTORY

The JVA has fourteen stores scattered among its different directorates in Amman and the Jordan Valley. Table 4.1 below shows the name and the location of each store.

**Table 4.1**  
**Store Names and Locations**

<u><b>STORE</b></u>	<u><b>LOCATION</b></u>
<b>Amman</b>	
• Amman	Supplies Directorate -Amman
<b>In the Northern and Middle Governate</b>	
• Wadi Al-Arab Dam	Wadi Al-Arab Dam
• Northern Directorate (Kle'aat)	Northern Directorate offices
• King Talal Dam	King Talal Dam
• Deir Alla Central	(Al-Reweha) Deir Alla
• Land Drainage	Deir Alla
• General Items (Al-Fanoosh )	Workshop Directorate
• Vehicles and Machinery Spare Parts (Al-Fanoosh )	Workshop Directorate
• Environment and Laboratories	Deir Alla
• Al-Karameh Dam	Al Karameh Dam
• Al-Karameh	Al Karameh
• Al-Kafrein Dam	Al-Kafrein Dam
• Sho'aib Dam	Sho'aib Dam
<b>In the Southern Governate</b>	
• Southern Ghors	Al-Safi Ghor

Each store has an inventory appropriate to its size, location and nature. For example, the laboratory store maintains items for laboratory use while a workshop store may have spare parts for vehicles and machinery or general items such as stationery, construction material, and furniture. The SGWA store has spare parts for vehicles and machinery, construction material, water pipes, pumps, stationery and other items. The number of items varies from one store to another. It is estimated that there are one hundred items in the Amman store and around fourteen thousand items in the spare parts store at the Workshop Directorate. There is no official figure of the total monetary value of items at JVA stores, but head of the Supplies Directorate believes the value is roughly JD 1.5 million.

Each store manually records inventory in the form of ledgers or index cards (Kardex). Such records show the following for each item:

- Item code (if available)
- Item description
- Item purchase price

- Item location in the store
- Quantity received
- Quantity issued
- Reference
- Transaction date
- Balance

Spare parts are coded using the manufacturer's part number; other items are defined by description only.

The Supplies Directorate controls all stores through its Stores Division. Each store is managed by one or more storekeepers who are responsible for receiving and issuing inventory and for updating stocks and records. The storekeeper has the authority to receive newly purchased items with a value up to JD 500. A committee of three JVA staff assigned by the SG may receive items with a value of JD 500 to JD 5,000. The committee along with a member from the general audit bureau is authorized to receive items with a value greater than JD 5,000.

The storekeeper updates inventory according to items received and vendor invoices and prepares five copies of a "receiving voucher." The storekeeper retains two copies and posts the information to the item card or ledger; the other three copies are sent to the Finance Directorate with the vendor's invoice, to the central store, and to custody item records. (Custody items are non-consumables such as tools, equipment, and furniture.)

Items are issued via an "issue request." On receipt of a request, the storekeeper posts it to inventory cards or ledgers and prepares five copies of an "issue voucher." Two copies are kept at the store, one copy goes to the recipient, one goes to the central store, and the last goes to custody item records.

Additional manual records are maintained for control purposes at the Deir Alla Central Store and at all other stores except those in the Southern Ghors and Wadi Araba Directorate and at the King Talal Dam. The records include custody items and are updated according to copies of store receipts and issue vouchers. As for the SGWA store, only one set of records, which includes custody items, is maintained, and it is kept on the premises. Store procedures do not include links or coordination between Northern and Middle Governate stores and the SGWA Governate store.

As a control procedure at the end of each year, several committees formed by the Secretary General count all items in stock in all stores. Inventory lists are prepared and submitted to the Supplies Directorate, and a copy is filed at each store. The lists show item descriptions and quantities available on the counting date. No monetary value is assigned to the lists; however, the cost of items can be determined by reference to receiving vouchers or to copies of vendor invoices filed at the stores.



## **CHAPTER 5**

### **WATER BILLING AND REVENUE**

When a farmer purchases or leases a farming unit, he submits a requisition for water connection to the Operation and Maintenance Directorate his unit belongs to. After the head of the directorate approves the requisition, the unit is connected and the approved requisition is sent to the appropriate stage office to schedule the unit in the irrigation program.

Each stage office has a cashier, an accounting clerk and a data entry clerk who maintain financial records of the sale of irrigation water to the farmers. Two manual ledgers are maintained at each stage office. The first is the monthly water consumption ledger (MWC). It records the daily or monthly quantity consumed by each farming unit. The second is the farmers' receivable ledger (FRL) which shows the water quantity consumed each month, the amount billed and the balance due from each farmer. (Theoretically, there is a meter at each farming unit to calculate the water quantity consumed. In fact, however, only a few water meters are operating properly; the rest are either broken or need maintenance.)

JVA field distributors send water to farming units according to a daily irrigation order that is printed at the stage office. Each distributor prepares a daily field report that shows the water distributed to each farming unit and submits it to the stage office. Accounting clerks at the stage offices post the daily water consumption to the MWC ledger. At the end of each month, the accounting clerks calculate the monthly water consumption and the invoice amount according to the water tariff and post the figures to the farmers' receivable ledger. Farmers do not receive invoices but are asked to pay the amount due whenever they apply for irrigation water.

The farmers pay the amount due to the cashier at the stage office against a formal receipt. The data entry clerk updates the billing system according to cash receipts. The stage office cashier submits the cash collected daily to the directorate's chief cashier who in turn deposits the cash in the bank. In addition to water sales, the stage office cashier collects other revenue such as penalties and water misuse fines. Such collections are entered whenever paid and are not recorded as receivables.

The accounting clerks at the stage offices prepare lists of receipts and submit them to the finance section. The clerks there classify the lists of each stage office and prepare monthly reports that show the details of cash collections and submit them to headquarters with other operational reports.

The Water Management and Control Directorate manages water resources and water distribution. It controls the development areas of the Northern, Middle and Southern directorates. The Control Systems Division receives daily information from the three directorates regarding water demand and available supply and accordingly prepares a Daily Water Balance and Forecast (DWBF) for nine stage offices (1-8,10) depending on the water available in the KAC and other sources. According to the DWBF, the stage offices generate Daily Irrigation Orders (DIO) and distribute water to the farming units.

The JVA has established a computerized water billing system in each stage office in the Northern and Middle Ghors Governate. The system contains information on monthly billing, on collection and on outstanding amounts. Every stage office has a data server

and data entry workstation(s). The data entry clerk at each stage office enters information related to billing, water and irrigation onto the data server. The ten stage offices of the Northern and Middle Ghors Governate transfer data to the Water Management and Control Directorate at Dirar either daily or on demand on floppy disks. The JVA is currently trying to connect the stage offices in Northern and Middle Ghors Governate to facilitate data transfer. Note that an interface has to be developed in order to link the current database with the new FAS.

In the Southern Ghors and Wadi Araba Governate, the water distribution program is prepared monthly according to water demand. The DIO is prepared and controlled by the Operation and Maintenance Directorate. Since there aren't any dams in that area, all water in the streams is distributed directly to the farming units. The billing and collection procedures in the SGWA Governate are the same as in the other directorates. The computer system at the two stage offices is used to print DIOs whereas billing information is kept manually.

## **CHAPTER 6**

### **FINANCE AND EXPENDITURES**

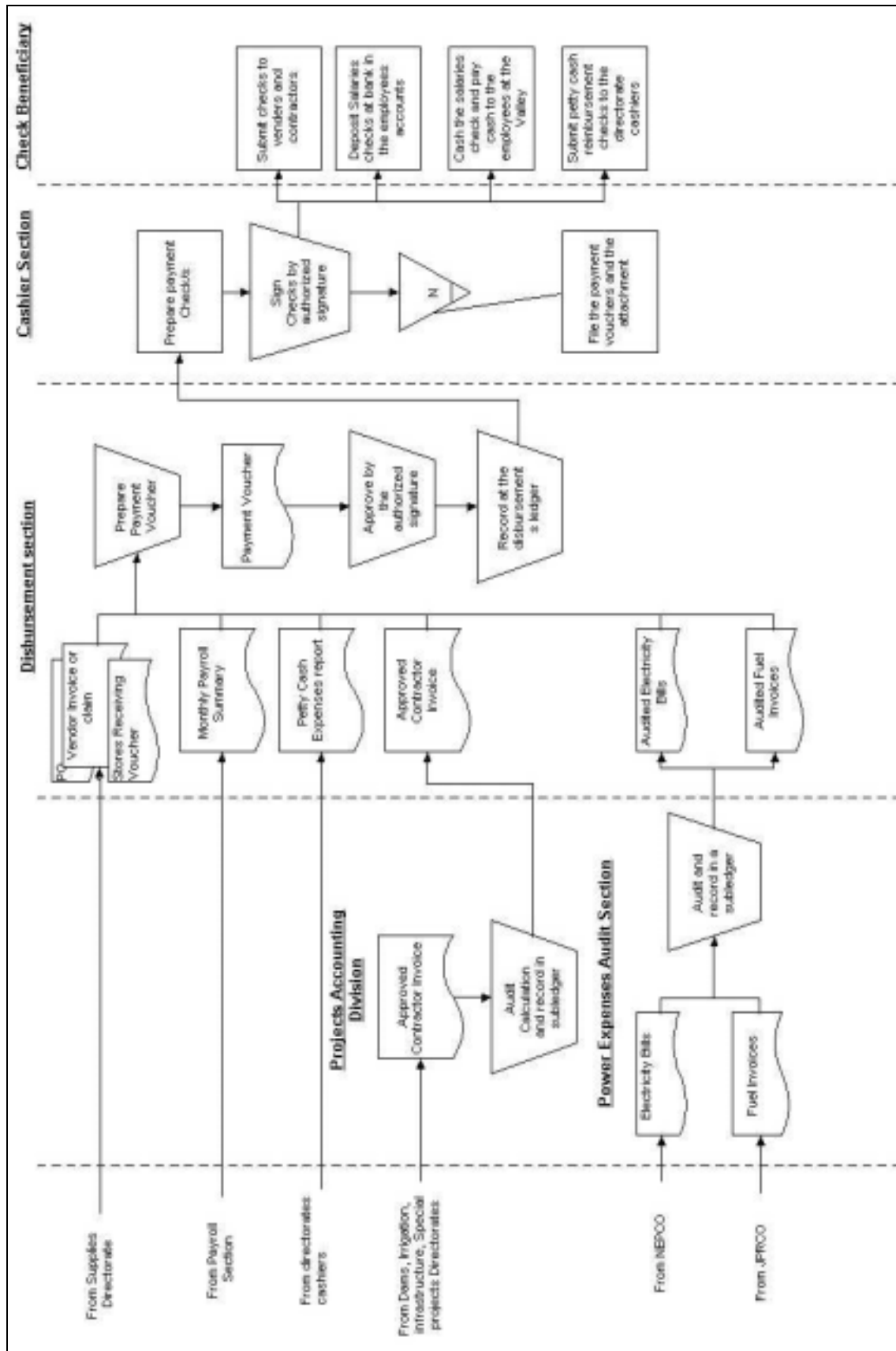
The Finance Directorate is responsible for all financial matters at the JVA including yearly budget preparation, cash collection, check payments, and reporting to the Ministry of Finance (MOF). The Directorate maintains line-item records to control and report collections and expenses according to government requirements. All other directorates prepare yearly budgets and submit them to the financial manager who verifies them and submits them to the General Government Department after approval by the SG. After the budget is approved by parliament, the Finance Directorate starts issuing checks accordingly.

Except for checks issued by the Land and Rural Development Directorate for payment for expropriated land, check issuance is centralized at the Finance Directorate at headquarters. The Directorate includes four divisions: Project Accounting; Expenditures; Internal Audit; and Finance. All checks are drawn by the Expenditures Division which has the following sections:

- Payroll and Social Security
- Disbursement
- Cashier
- Revenue
- Classification
- Power Expenses Audit

Diagram 6.1 on the following page summarizes the check payment process.

**Diagram 6.1**  
**The Check Payment Process**



The Payroll and Social Security Section prepares payroll summaries according to data provided by the Personnel Division. After approval, the summaries are sent to the Disbursement Section which prepares payment vouchers and records them in the disbursement ledger. The payment voucher is then approved and sent to the Cashier Section to prepare checks. Most JVA employees have bank accounts, so the cashier deposits checks directly into them. For those employees in the valley who don't have bank accounts, their salaries are cashed by an authorized cashier and delivered to them in cash.

The Power Expense Section receives monthly electricity bills directly from the National Electrical Power Company (NEPCO) and monthly fuel invoices from the Jordan Petrol Refinery Company (JPRCO). This section verifies invoices received and submits them to the Disbursement Section which receives all vendors' and contractors' invoices or claims either directly or through other sections or divisions. Disbursement prepares payment vouchers, records them in the disbursement ledger, gets approval for payment, and submits the vouchers to the Cashier Section. The Cashier Section prepares the check, has the authorized person sign it, and submits it to the beneficiary.

After the check is paid, the Classification Section receives the payment voucher and the attachments, records them in a classification ledger according to budget line item, and files them. Also, deposits received from farmers and other parties are recorded and followed up by this section.

As mentioned previously, JVA projects are monitored by different directorates such as Dams, Irrigation, and Infrastructure and Special Projects. These directorates receive contractors' invoices, approve them, and send them to the Finance Directorate. The Project Accounting Division in the Finance Directorate verifies and audits the invoices, records them in the projects sub-ledger and sends them to the Disbursement Section to complete the payment procedure.

Some of these projects are financed through loans from third party lenders. At present, JVA is not a party to any of the loan agreements and has no contractual obligation towards lenders, therefore a liability (loan) should not be recognized in JVA books. JVA role is to keep track of loan balances and control the spending process to make sure that the loan proceeds were used to perform designated projects in the budget.

The process of obtaining a loan starts by preparing a feasibility study by a consulting firm. This study is then sent to the Ministry of Finance (MOF) for approval, after approval, MOF sends the study to the Ministry of Planning (MOP) to negotiate loan terms with third party lenders. Once a loan agreement is reached the government of the Hashemite Kingdom of Jordan signs the loan agreement (not JVA).

The process of disbursing cash to contractors starts after approving their invoices by the concerned Directorate, cash payment orders are prepared and sent either to MOP or directly to the lender for settlement based on the following criteria:

- If the loan is for JVA projects, the cash payment order is sent directly to the lender for settlement.
- If the loan is for other government bodies including JVA, the cash payment order is sent to MOP for settlement with the lender.

After settlement the lender sends a debit note of the amount to MOP and a copy to JVA.

In the future, if JVA starts to negotiate loans with lenders (MOF or other lenders), these funds should be booked as a loan liability on JVA. The accounting treatment for loans will be addressed in the financing cycle redesign.

The Revenue Section at the Finance Directorate handles withholding such as duty stamps, income tax and social security. These amounts are recorded in detail in a ledger and are sent monthly by check to the beneficiary department. All other collections that belong to the JVA are deposited and transferred to MoF accounts. This section also handles cash collections by JVA and other cashiers and prepares monthly reports on revenue.

## **CHAPTER 7**

### **COMPUTER USE**

The JVA operates two Data General AV3600 servers over a 10/100 MB network. The servers are running Oracle Seven RDBMS; the application has been migrated into a 32-bit client/server environment using Developer/2000 as the front-end tool. Currently the JVA is upgrading the ORACLE RDBMS from version seven to eight.

The Water Management and Control Directorate at Dirar Center operates a Digital Alpha server 4000 series running Digital UNIX and a Windows NT (RAS) server and SCADA system running on an Intel-based machine. The Alpha server is running Oracle Seven whereas stage offices are operating an MS-Windows NT Server with ORACLE Seven, Workgroup Edition, and two Windows 95 clients are running Developer/2000. The JVA has completed its Y2K testing for applications and systems.

Systems currently in place that could be integrated into the new FAS include the following:

#### **7.1 Payroll System**

The JVA has implemented a computerized personnel/payroll system that tracks employee data such as salary, work location, and withholding. This information is a good source of labor costs for the FAS. The system is centralized at HQ and operated by the Personnel Division. Employee transfers from one location to another and other daily information is submitted from the valley and updated in the system whenever received. Some standard reports are generated by the system, but there is a need to design and program other reports to provide detailed information about the labor costs for each cost center.

#### **7.2 Water Management Information System (WMIS)**

The JVA has implemented a billing system for irrigation water for the directorates. In parallel with the manual records, the stage offices maintain their own billing records and send summary reports on collections to the Finance Directorate in Amman. The system contains information on what was billed and collected and on what accounts are outstanding.

Even after establishing this system, manual records for billing and collection are still maintained at the stage offices. The manual records are checked and compared monthly with computer results. Once the MoF has approved the new FAS, manual records should no longer be maintained.

#### **7.3 Budget and Accounting System**

The system currently in place is referred to as the JVA financial accounting system. Its main aim is to track budget line items and to show what is spent and what is outstanding on a budget line item level. It is an automated system that is used in conjunction with a manual system to generate required reports for the Ministry of Finance. The system is not a true accounting system and does not have the structure, which would facilitate tracking costs by function and responsibility. In addition, transactions are not recorded on an accrual basis.

In any case, the current system may still need to be maintained for purposes of reporting to the Ministry of Finance though it may not be appropriate to integrate it into the new FAS. Budget information for the proposed FAS should be allocated into different classifications, which provide information on a cost center/responsibility center basis in order to provide meaningful management information.

#### **7.4 Lands Department Information System**

The system contains relevant data on land and landowners' finances. It tracks and handles land transactions such as expropriation, redistribution, purchasing, leasing and changing ownership. Moreover, it keeps track of accounting-related information such as receivables, estimated prices of expropriated land units and installment schedules. The system generates a set of reports related to accounting and finance, price estimation, and surveys.

#### **7.5 Connecting Directorates and Stage Offices in the Jordan Valley with Headquarters via Limited Area Networks and Wide Area Networks (LAN/WAN)**

A new tender funded by Kreditanstalt für Wiederaufbau (KfW) has been released to expand the WMIS. The WMIS was originally limited to the control center in Dirar and nine stage offices in the Jordan Valley. It will now be implemented in the Northern, Middle and Southern directorates and in the Fourteen-and-a-Half Kilometer Stage Office (Stage Office 9). Through this tender, LANs at the control center, at the directorates, and at the stage offices will be linked together through the JVA thirty-pair, private communication cable. The cable extends over one hundred kilometers in length and covers a wide area as it runs alongside the King Abdullah Canal. The rest of JVA sites are out of the KfW/ WMIS project scope.

The implementation phase of the FAS will require mature and reliable WAN availability in order to establish an automated financial/accounting system in all JVA offices. Such a computer network would facilitate data flow, data analysis, systems analysis, and data entry from various JVA sites in Amman and in the valley. Without a WAN, financial data will continue to reside at the directorate or stage office levels and will not be available for use either by senior management or by the FAS.